

This listing of claims replaces all prior versions, and listings, of claims in this application.

Listing of Claims:

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Canceled)
8. (Canceled)
9. (Canceled)
10. (Canceled)
11. (Canceled)
12. (Canceled)
13. (Canceled)
14. (Canceled)
15. (Canceled)
16. (Canceled)
17. (Canceled)
18. (Canceled)
19. (Canceled)

20. (Canceled)

21. (New) A process for immobilizing wastes comprising:

contacting an immobilizing mineral with a solution containing a waste having one or more of radionuclides, hazardous elements, and hazardous components, resulting in a waste integrated immobilizing mineral; and

heating the waste integrated immobilizing mineral to transform the waste integrated immobilizing mineral from a less stable mineral to a more stable mineral.

22. (New) The process of claim 21, further comprising enhancing capability of the immobilizing mineral to integrate with one or more of the radionuclides, hazardous elements, and hazardous compounds in the waste.

23. (New) The process of claim 22, wherein the step of enhancing involves treatment with one of acid, base and heat.

24. (New) The process of claim 21, wherein the heating of the waste integrated immobilizing mineral forms a waste product.

25. (New) The process of claim 24, further comprising burying the waste product within an indigenous rock, wherein the indigenous rock and the surrounding matrix comprise at least one common component.

26. (New) A process for immobilizing solid wastes comprising:
heating a solid waste having one or more of radionuclides, hazardous elements, and hazardous compounds with components of an immobilizing mineral at an elevated temperature;
and
cooling to result in crystallization of the mixture into one or more reacted crystals that is integrated with the one or more of radionuclides, hazardous elements, and hazardous compounds.

27. (New) The process of claim 26, further comprising mixing the solid waste with the components of an immobilizing mineral before or during the heating step.

28. (New) A process for immobilizing wastes comprising:
adding to a mixture of a waste and an immobilizing mineral with one of rock and glass that has components of the immobilizing mineral, wherein the waste includes one or more of radionuclides, hazardous elements, and hazardous components;
heating the mixture to a temperature that is above melting point of the one of rock and glass but below melting point of the immobilizing mineral; and

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cooling the mixture to result in formation of an effective covering of the waste integrated mineral and a surrounding rock or glass matrix.